



Navigation 1

Skipper/XO Training
2006



Navigation...

Why Such A Big Deal???



- Groundings on the bay
- Groundings in New England
- The Navy 44 (stout but not indestructible)



What We'll cover



- This course teaches the practice of navigation onboard CSNTS STC's
 - Need to develop proficiency here, in the classroom, so that you can remember the details when at sea...
- It doesn't teach tides and currents
- It does not teach the analytical underpinnings
 - That's left to you
 - Read Dutton's, or US Sailing's Coastal Navigation Text



The Text Books...

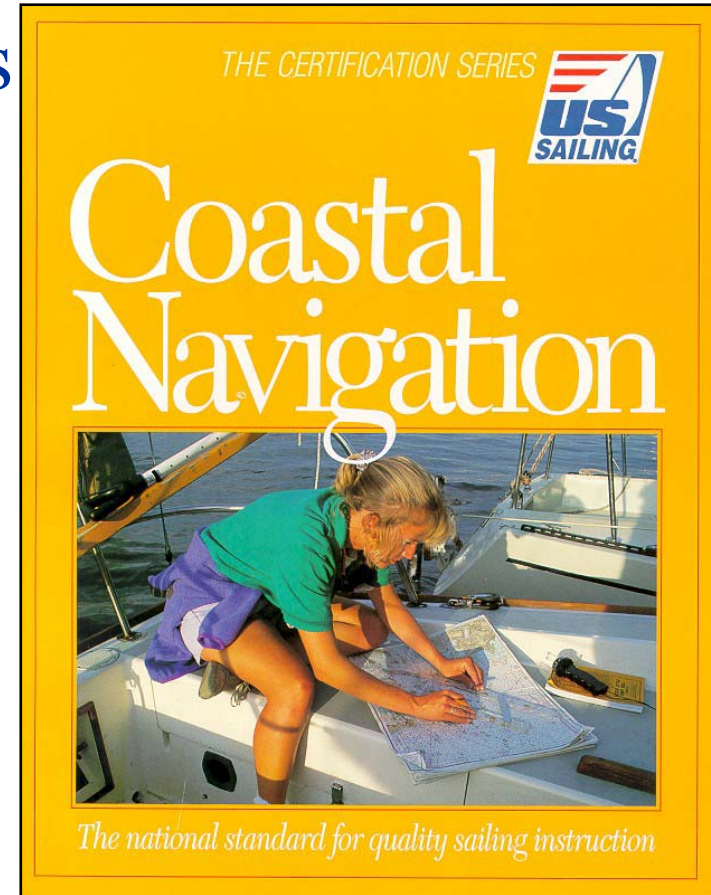


Particularly useful

- Teaches short-handed Nav Skills
- Teaches “seaman’s eye”
- Uses layman’s terminology

But...

- The Navy uses the “alternative plotting method”
- We use “Degrees Magnetic”





The Text Books...

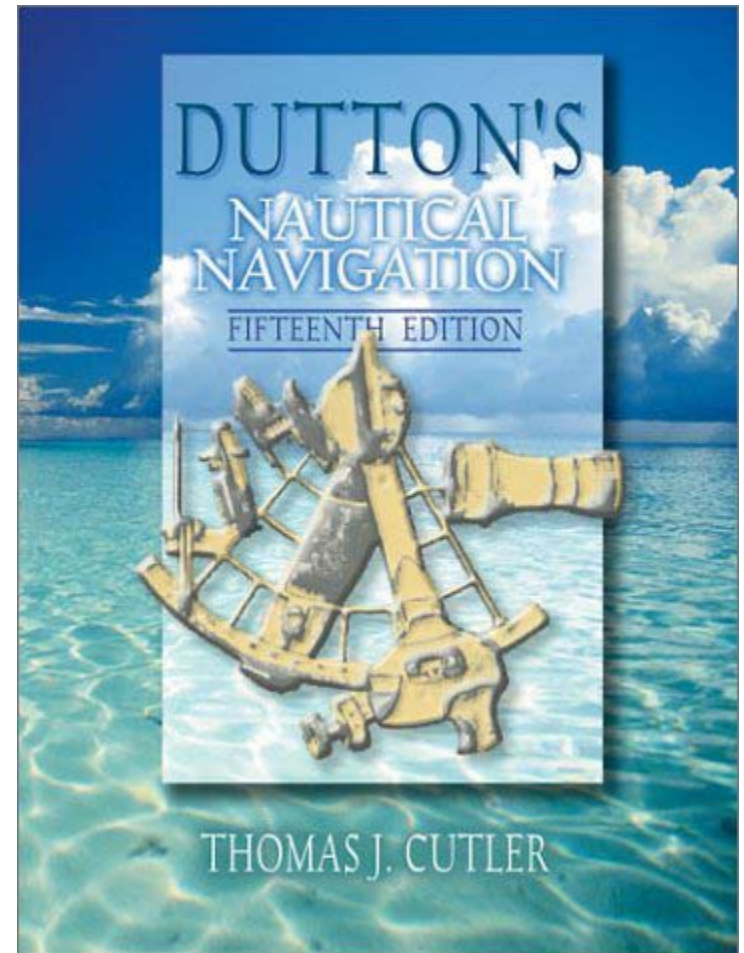


The Midshipmen's Text

We teach this to our
prospective program
participants

Why?

This is the standard that the
3/C will be taught to

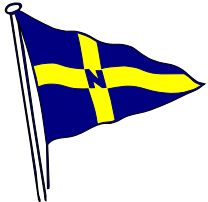




Course Overview...



- The Chart
 - Primary emphasis on chart preparation
- The Fix
 - Visual & Electronic
 - Accuracy and errors
- The DR
 - The most important thing on the chart
- Making landfall
 - The Navigation Brief
- Navigation Party
 - Organization, procedures & philosophy
- Navigation Practical



Before We Talk About Charts...

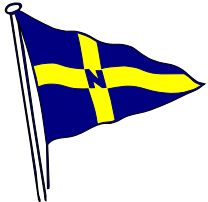




What's In The Average Nav Table?



Dividers & Compass



The Other Tools of the Trade...



Nautical Slide Rule



Roller Plotter



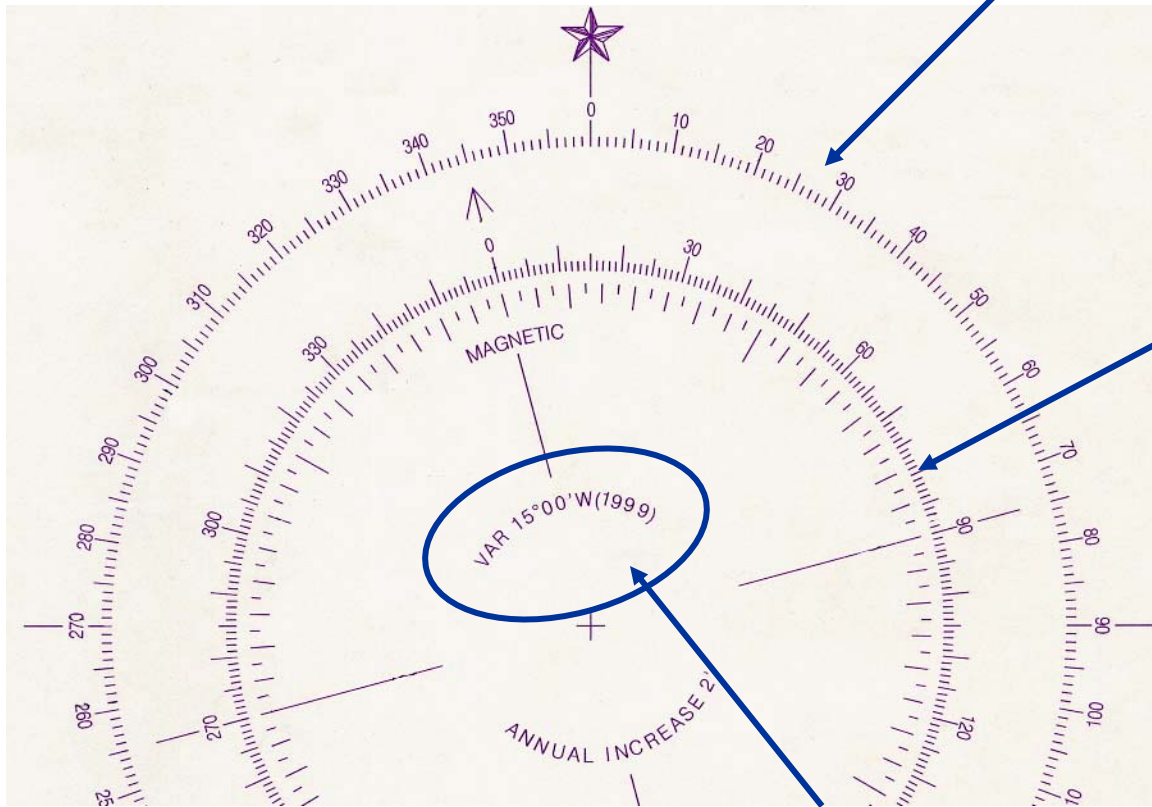


The Compass Rose...



Degrees True

- Don't use this one...



Degrees Magnetic
- Use this one!!!

Variation...

- What do you need to know?



The Steering Compass...



Key elements:

- Susceptible to deviation errors
- Mids ought to be able to steer within ten degrees of ordered course without looking at the compass
- Not Midshipman Proof





The Hand Bearing Compass...



Key elements:

- Almost Midshipman Proof
- Susceptible to deviation errors
- They come with a Lanyard – Use it!!!

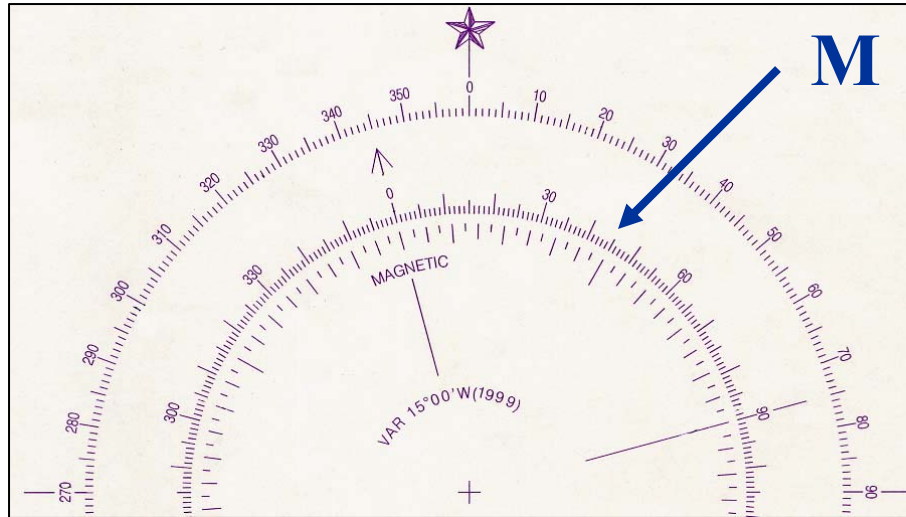




The Bottom Line...



A



B



C

We assume Deviation = 0

$$\underline{A = B = C}$$

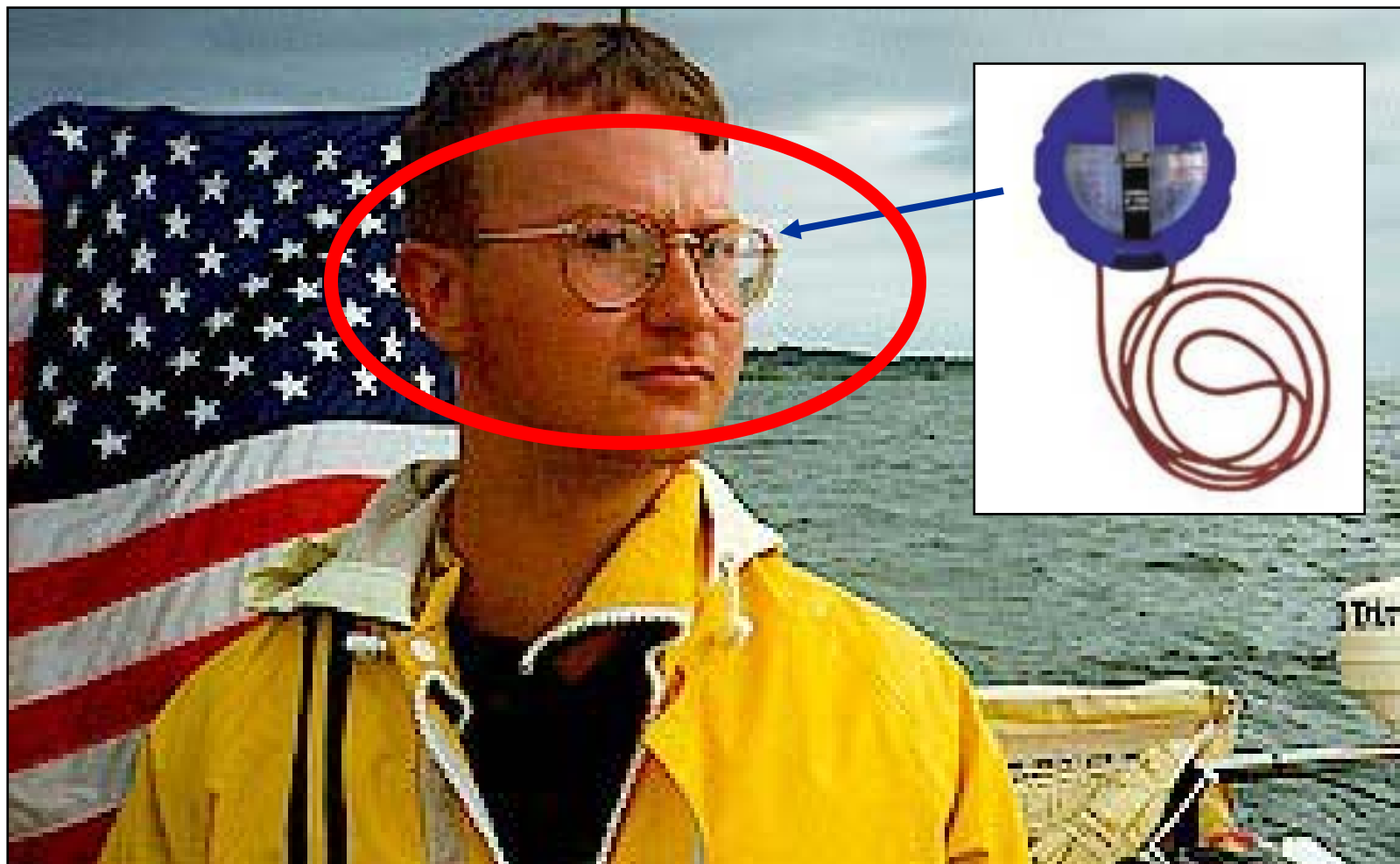


Unless...





And Unless...





The Chart...



- What must you know?
 - Latitude & Longitude
 - Sounding datum
 - Nav Aids and Nav Hazards
 - Chart 1
 - Is it current?
 - Notice to Mariners



Latitude & Longitude...



- Two scales
 - Degrees, Minutes & Tenths ($38^{\circ} 10.5' \text{ N}$)
 - Degrees, Minutes & Seconds ($38^{\circ} 10' 30'' \text{ N}$)
- Make sure GPS readout is in same units

Note: Many errors occur on the chart shift!!!

- Use latitude for distance measurement
- **$1' \text{ lat} = 1 \text{ nm}$**



Sounding Datum...



- Fathoms, Feet or Meters??? (make B&G match)

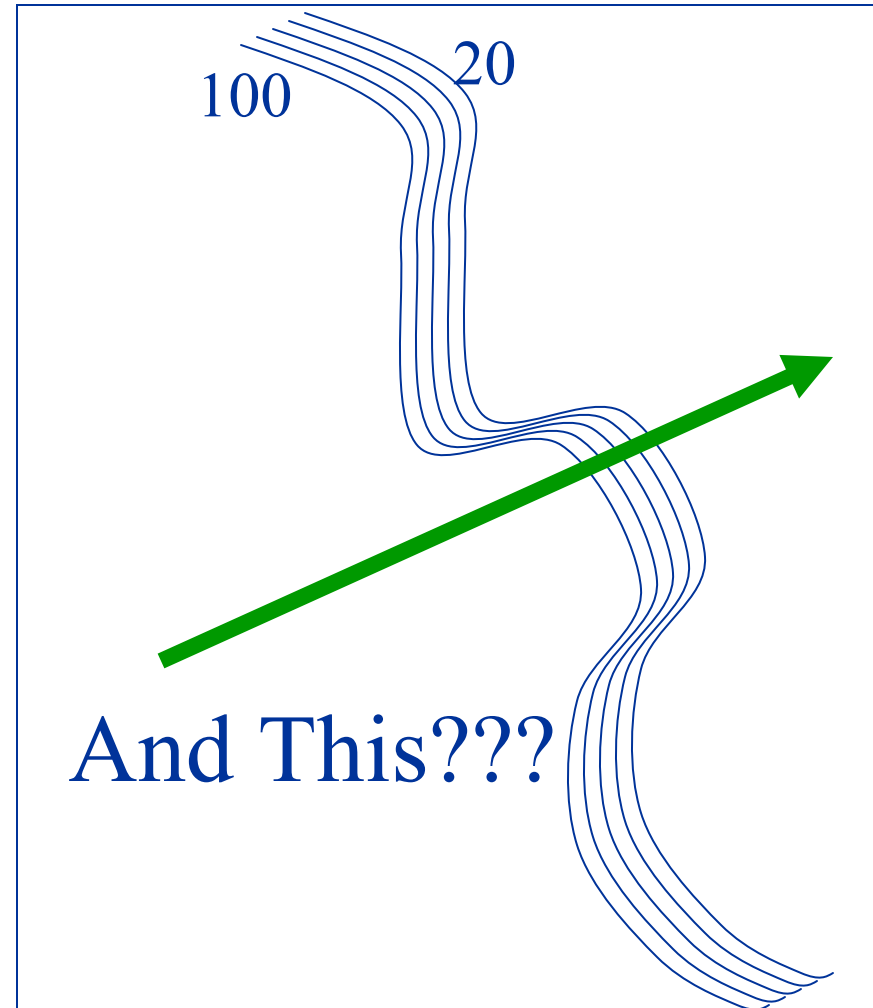
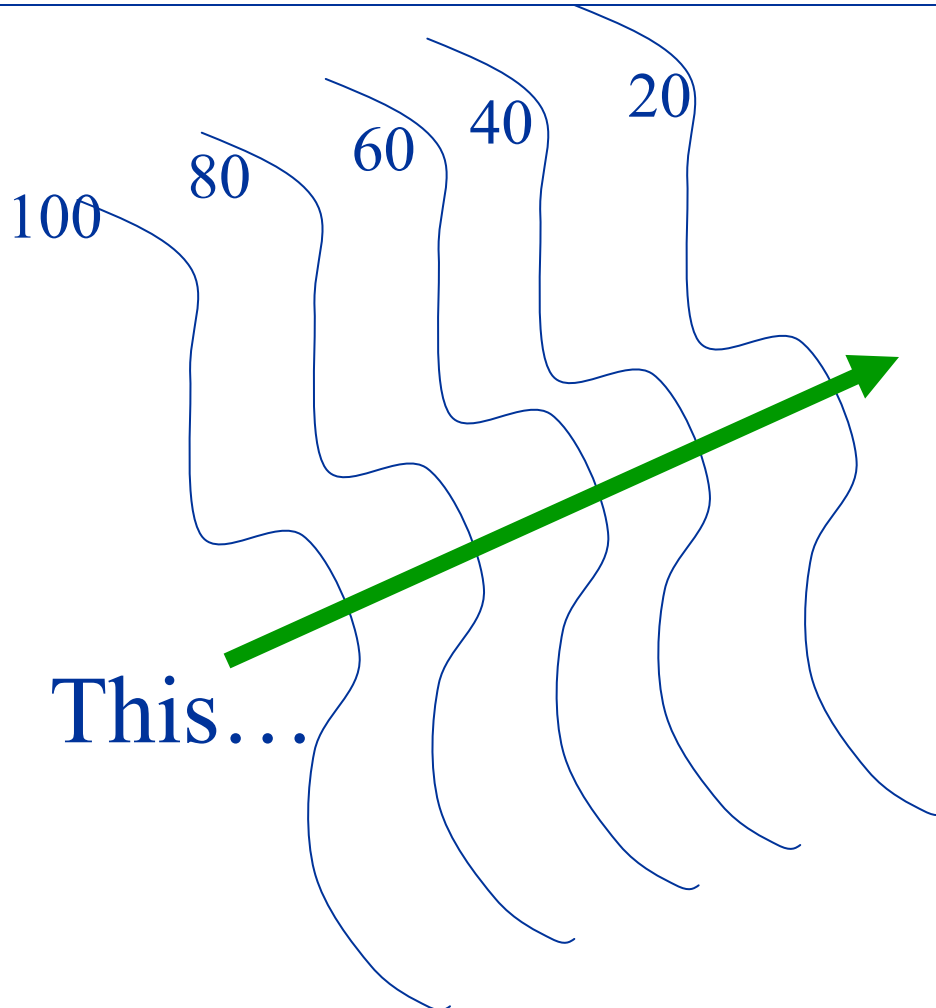


}

7' 6"



What's The Difference Between...

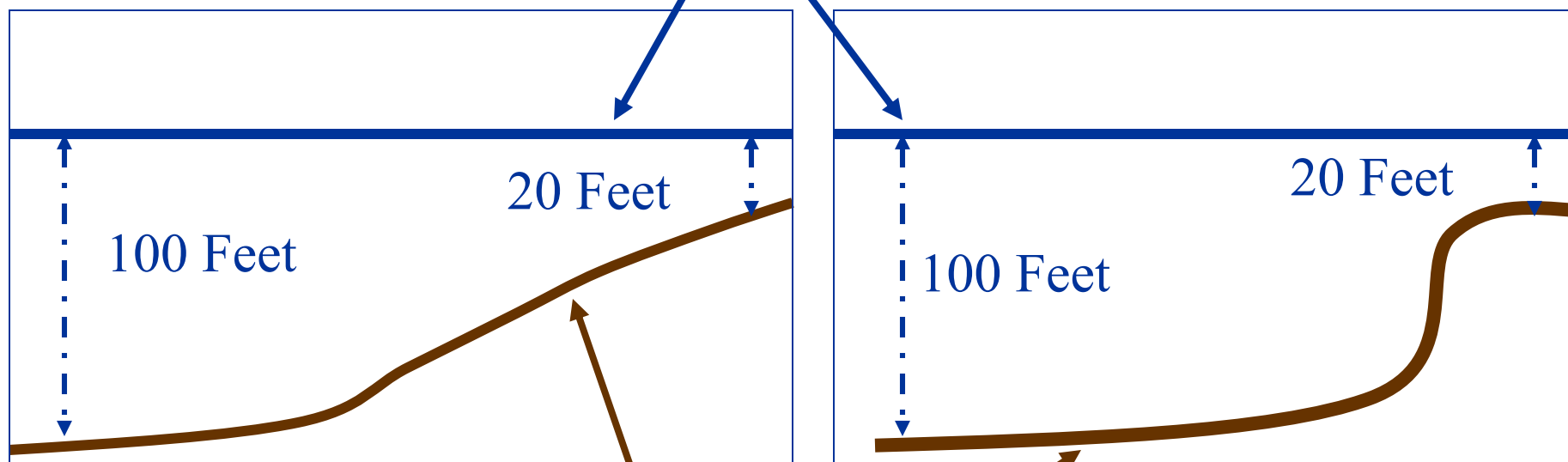




What's The Difference Between...



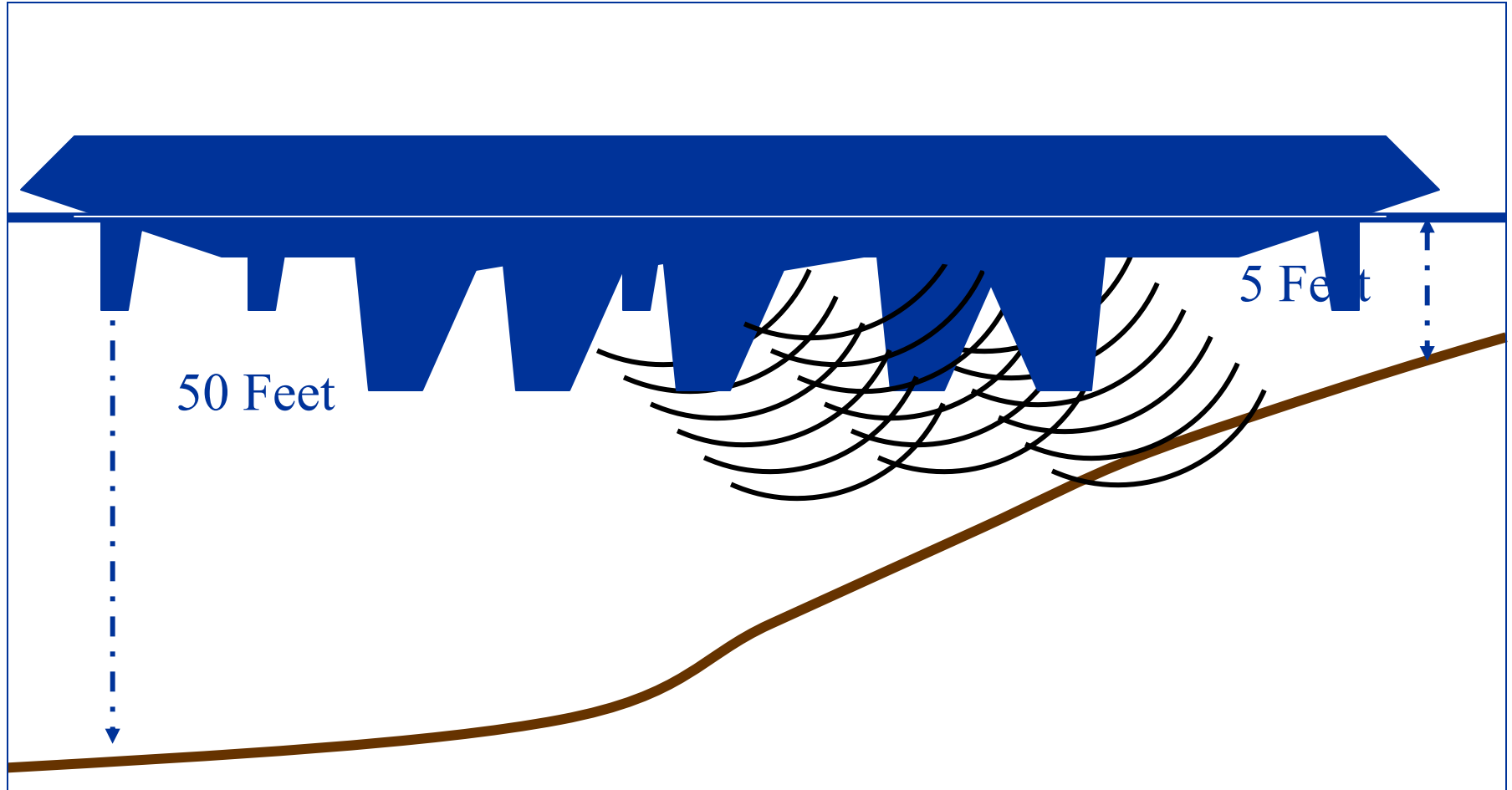
Water Surface



Bottom Contours



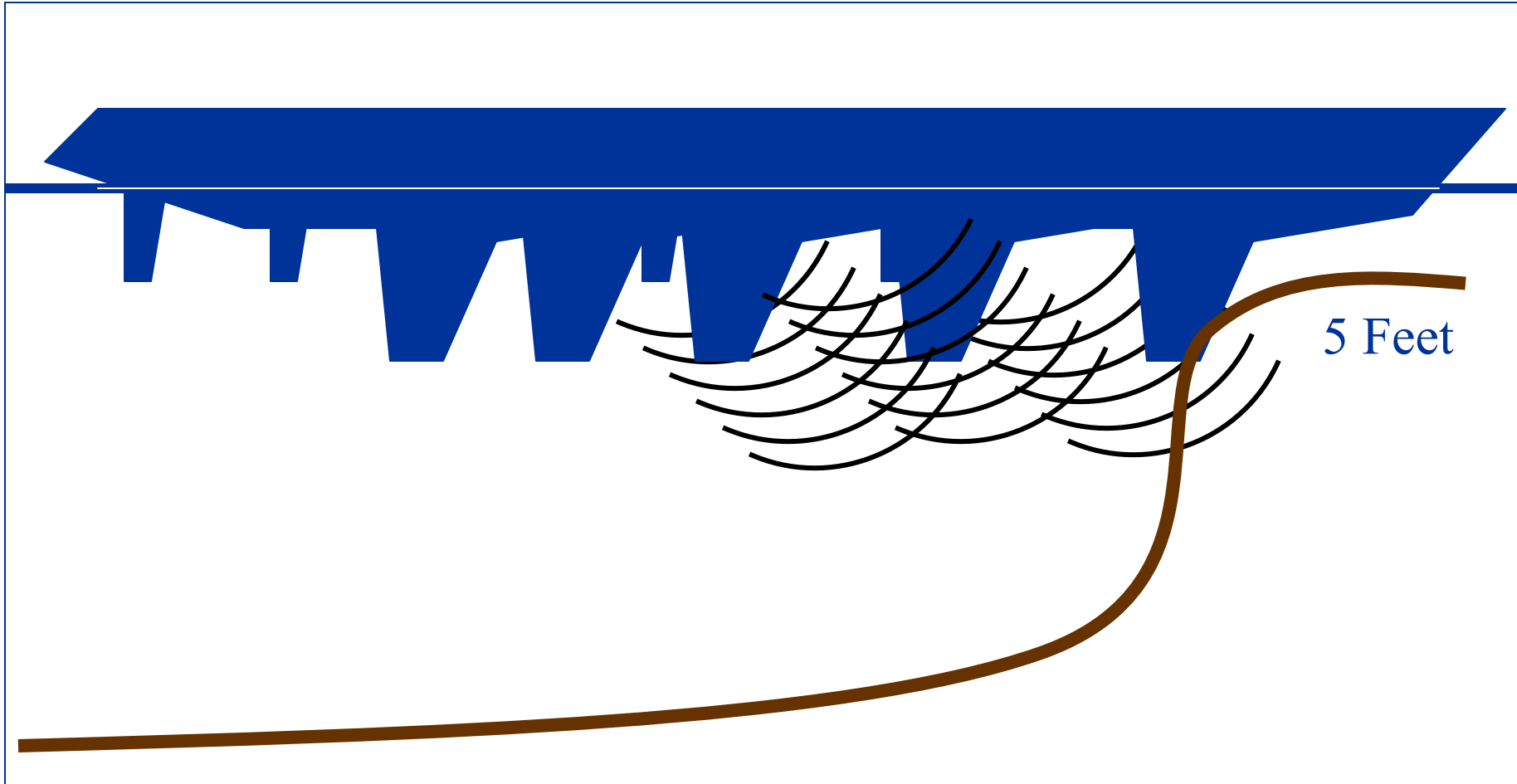
What's The Difference Between...



Time To React...



What's The Difference Between...



No Time To React...



The Chart...

And the Chart's Answer Key

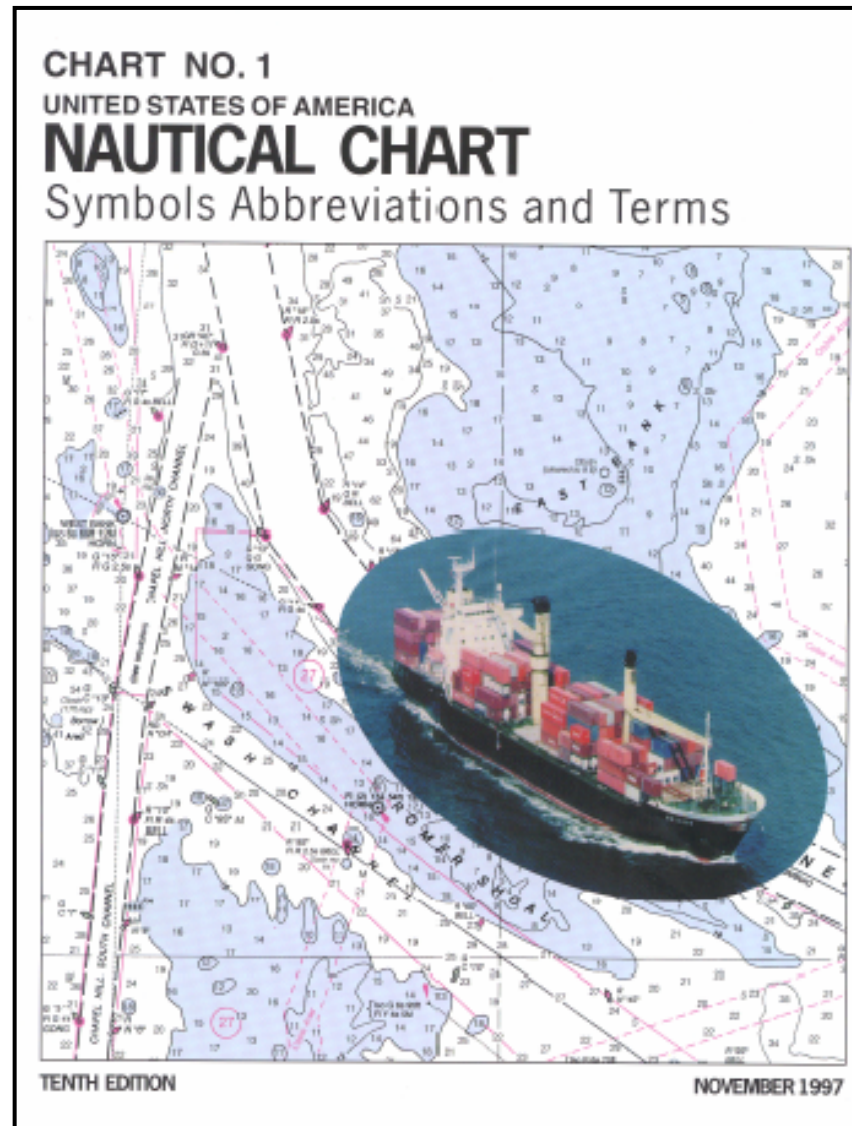
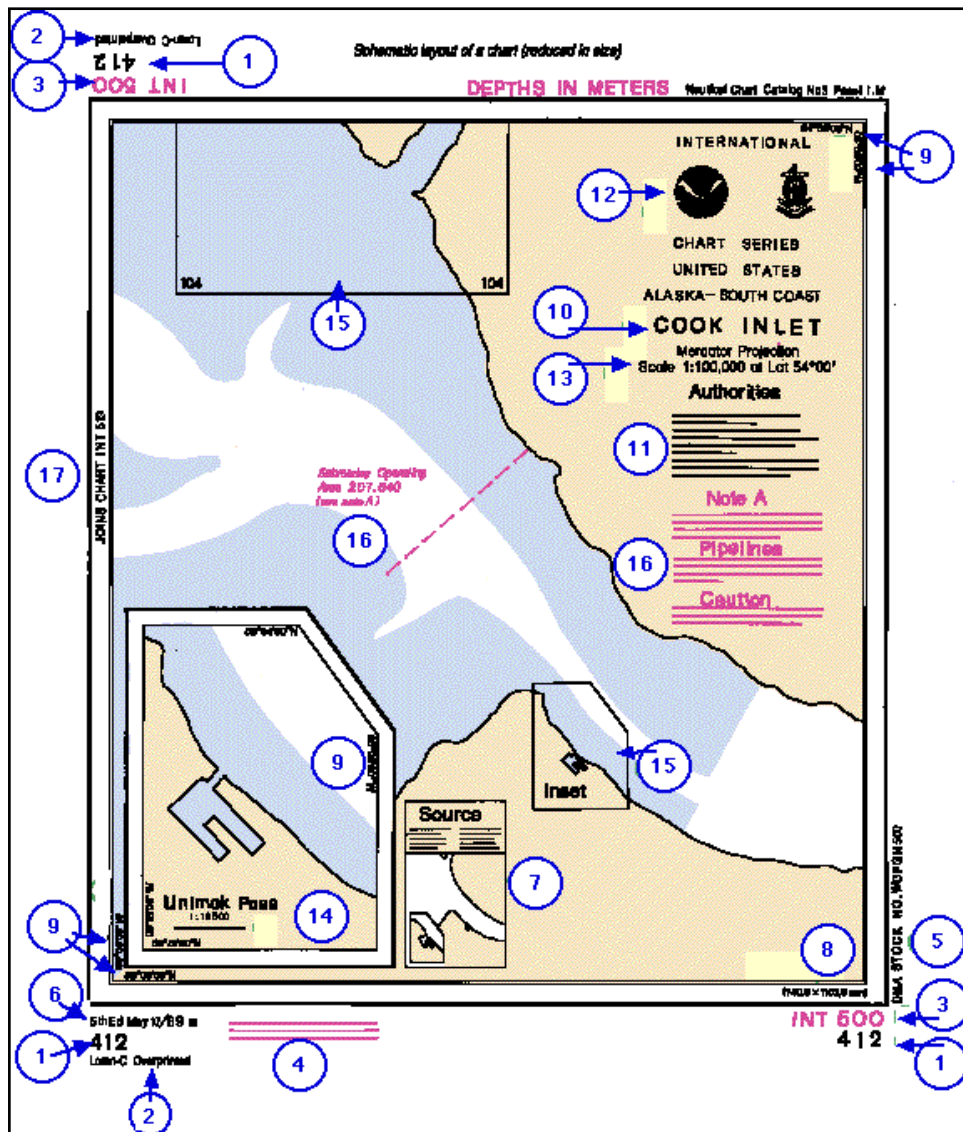




Chart Up To Date???



Notice to Mariners - Netscape


File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Netsite: http://pollux.nss.nima.mil/untm/untm_options.html?class_flag=N What's Related

Counties and Re Instant Message Members WebMail Connections BizJournal SmartUpdate Mktplace

UNITED STATES OF AMERICA



Notice to Mariners

Note

The US Notice to Mariners corrects NIMA and NOS charts using information collected from many sources, among them the US Coast Guard Local Notices published by the several Coast Guard districts. From all sources the US Notice to Mariners will contain only those chart corrections of interest to *ocean going vessels*.

View/Download the NTM

Notices to Mariners are available for online review or download, as well as the special paragraphs from the last released NTM 01. For a specific data set, [Query the NTM Database](#) below.

Notice Number	Notice Date
---------------	-------------

Document: Done

Start | Exploring... | Microsoft... | Notice... | Microsoft... | NetWare Br... | 11:23 PM



Chart Up To Date???



- http://pollux.nss.nga.mil/untm/untm_j_chartcorrect.html?class_flag=N
- Select 'All Notices To Mariners'
- Type in Chart # you wish to correct under 'Specific Charts'
- Select 'Display output in a html table'. Click 'Search' – (bottom of page on left)
- Print out will list all active notice to mariners and the first correction will note the most current edition of the chart.



The Chart Prep Checklist...



1. Chart number _____
2. Identify chart for use and insure chart is the latest edition using the Hydro Product Catalog, Notice to Mariners and Local Notice to Mariners.
3. Locate Notice to Mariners or Notice to Mariners chart updates via the internet:
<http://www.navcen.uscg.gov/htm/> (for Local Notice to Mariners) or
http://pollux.nss.nima.mil//untm_j_options.html?/class_flag=N (for Notice to Mariners, corrections for overseas.
4. Make all corrections on chart with corrections carefully annotated in the correction tree located in left margin of chart. The correction tree will have three columns: NTM or LNTM number, date and printed initials of person responsible for making correction to chart. If corrections are temporary in nature annotate with pencil; otherwise, all corrections will be made with black ink. **Navy Sailing only, highlight Sounding Datum in yellow and highlight the magnetic ring of the compass rose – Navy Sailing only uses magnetic headings.** Corrections will never be made with red ink



Making The Chart Corrections...

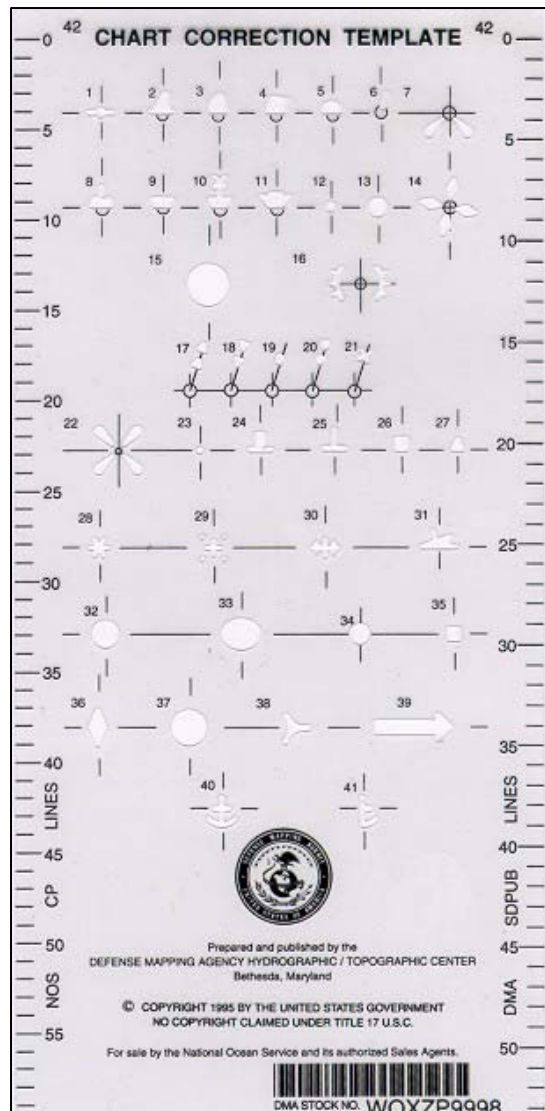


Chart Correction Template,
(Available from the Chart
Room in Luce Hall)



The Chart Prep Checklist



5. Highlight chart sounding datum (feet, fathom or meters). Outline all shoal water on chart with a blue Sharpie Permanent Marker, Ultra Fine Point. (A fine point is preferred over a wide tip in order to not to cover important chart information.) Outline all shoals on chart accordingly to depth of vessel. 10 foot for YP and **12-18 foot for Navy Sailing**. Danger bearings will be used if the track comes within 25 yards of a navigation hazard if the navigation hazard is not identified by a navigation aid.
6. With a pencil, create the track. Never use red ink on a chart. Once master charts and tracks (YP only) are approved by the Chairman of Seamanship and Navigation, the track will be marked with a black Sharpie, Ultra Fine Point.
7. **On Navy sail boats, all tracks will be labeled with magnetic courses**, on Navy YP's, all tracks will be clearly labeled with True and Magnetic course, speed of advance and distance in yards of total track, Diagram One. This will be placed along the track at least once in an area that does not interfere with chart information. Distance is measured from way point to way point. There will be no cross hairs at way points.



The Chart Prep Checklist



8. On Navy YP's, advance and transfer calculated, junction box erased, distance to turn point labeled at 100 yard increments and 500 yards after 1000 yards if does not interfere with safe navigation. **(NA for Navy Sailing)**

9. Identify visual and radar navigation aides. Mark visual aides using a circle filled in with yellow fluorescent highlighter. Label visual aides with a two letter identifier starting with letter 'V', i.e. VA, VB, and etc. Mark radar aides using a triangle filled in with blue fluorescent highlighter. Label radar aides with a two letter identifier starting with letter 'R', i.e. RA, RB, and etc.

10. Turn bearings – **(NA for Navy Sailing)**

11. Master voyage plan charts – **(NA for Navy Sailing)**



The Chart Prep Checklist



12. Each vessel will prepare their own charts. Navy YP's will use the master voyage plan charts for reference and the way points distributed from the master charts for crew chart preparation. Once the master charts have been approved for a voyage, the approval and review format will be as follows:

Prepared by: _____ (3/C Navigator)

Reviewed by: _____ (XO)

Approved by: _____ (Skipper)

The bottom line approval for charts will be either the YP's Midshipman Commanding Officer or the sailboat's OIC/Skipper. The bottom line approval for Power Squadron will be the Commodore of Power Squadron after they have been approved by the Chairman of Seamanship and Navigation or his/her representative. This block will be located on an area of the chart not used for navigation.



The Chart Prep Checklist



13. Fold and label the chart. Fold the chart in fourths (with the back side out). Label in legible 1" print letters on the bottom right hand corner of the chart - the chart name and number. Immediately above the label, write the number of the previous chart on the track and immediately below the label, write the next chart number on the track. The numbers of the previous and next charts should be 1/3" lettering. For example:

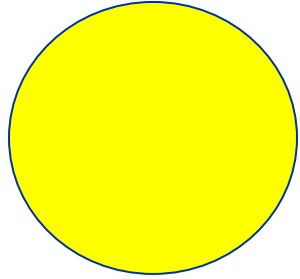
Chart: 13224

Chart 13223 Narragansett Bay Including Newport Harbor

Chart 13218

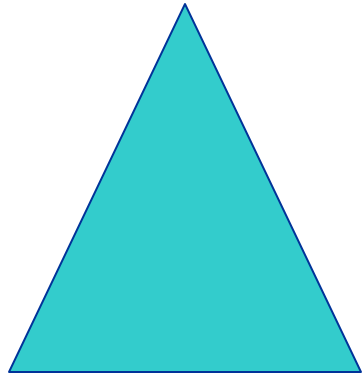


Identifying Nav Aids



Visual Aids To Navigation

- Highly visible to naked eye, or binoculars
- Lighthouses, towers, etc



Electronic Aids To Navigation

- Highly visible on radar
- Jetty, Bridges, land masses



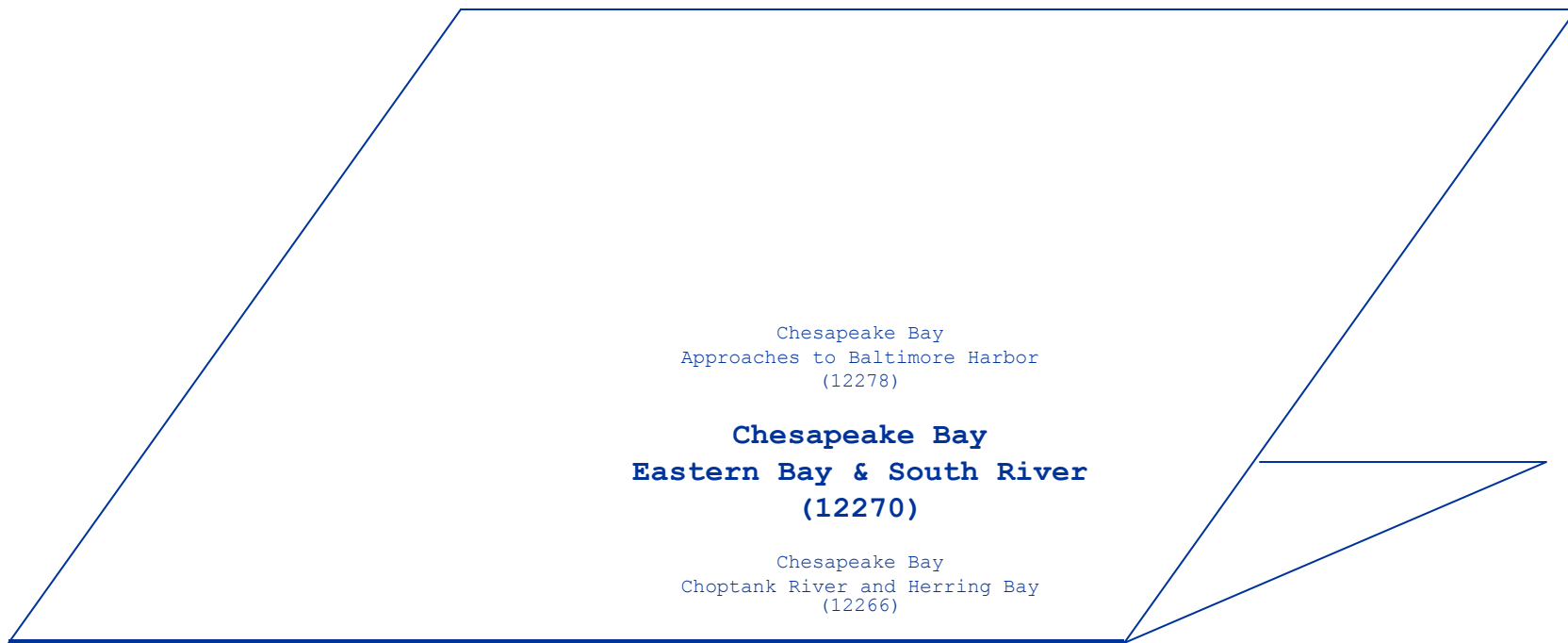
Should We Label A Track???

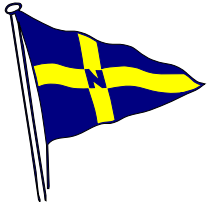


- Sailboats don't move in straight lines...
- Previews where are we're going
- It's proof that you thought it through...
- It tells you how much you've deviated from the game plan that was developed while warm, dry and comfortable



How Do You Fold A Chart?





How's It Labeled?



Chesapeake Bay
Approaches To Baltimore Harbor
(12278)

**Chesapeake Bay
Eastern Bay & South River
(12270)**

Chesapeake Bay
Choptank River & Herring Bay
(12266)



Next Class...



- ✓ The Chart
 - Primary emphasis on chart preparation
- The Fix
 - Visual & Electronic
 - Accuracy and errors
- The DR
 - The most important thing on the chart